



General

Guideline Title

Screening for gestational diabetes mellitus: U.S. Preventive Services Task Force recommendation statement.

Bibliographic Source(s)

U.S. Preventive Services Task Force (USPSTF). Screening for gestational diabetes mellitus: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2014 Mar 18;160(6):414-20. [20 references] [PubMed](#)

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: U.S. Preventive Services Task Force. Screening for gestational diabetes mellitus: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2008 May 20;148(10):759-65.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

The US Preventive Services Task Force (USPSTF) grades its recommendations (A, B, C, D, or I) and identifies the Levels of Certainty regarding Net Benefit (High, Moderate, and Low). The definitions of these grades can be found at the end of the "Major Recommendations" field.

Summary of Recommendations and Evidence

The USPSTF recommends screening for gestational diabetes mellitus (GDM) in asymptomatic pregnant women after 24 weeks of gestation. (B recommendation)

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for GDM in asymptomatic pregnant women before 24 weeks of gestation. (I statement)

Clinical Considerations

Patient Population Under Consideration

These recommendations apply to pregnant women who have not been previously diagnosed with type 1 or 2 diabetes mellitus.

Assessment of Risk

Several factors increase a woman's risk for GDM, including obesity, increased maternal age, history of GDM, family history of diabetes, and belonging to an ethnic group at increased risk for GDM (Hispanic, Native American, South or East Asian, African American, or Pacific Island descent).

Factors associated with a lower risk include age younger than 25 to 30 years, white race, body mass index (BMI) 25 kg/m² or less, no family history (that is, in a first-degree relative) of diabetes, and no history of glucose intolerance or adverse pregnancy outcomes related to GDM.

Screening

Two strategies are used to screen for gestational diabetes in the United States. In the 2-step approach, the 50-g oral glucose challenge test (OGCT) is performed between 24 and 28 weeks of gestation in a nonfasting state. If the screening threshold is met or exceeded (130 mg/dL, 135 mg/dL, or 140 mg/dL [7.21, 7.49, or 7.77 mmol/L]), patients receive the oral glucose tolerance test (OGTT). During the OGTT, a fasting glucose level is obtained, followed by administration of a 100-g glucose load, and glucose levels are evaluated after 1, 2, and 3 hours. A diagnosis of GDM is made when 2 or more glucose values fall at or above the specified glucose thresholds. Alternatively, in the 1-step approach, a 75-g glucose load is administered after fasting glucose and plasma glucose levels are evaluated after 1 and 2 hours. Gestational diabetes mellitus is diagnosed if 1 glucose value falls at or above the specified glucose thresholds.

Timing of Screening

Screening is recommended after 24 weeks of gestation. Screening for GDM may occur earlier than 24 weeks of gestation in high-risk women, but there is little evidence about the benefits and harms of screening before 24 weeks of gestation.

Treatment

Initial treatment includes moderate physical activity, dietary changes, support from diabetes educators and nutritionists, and glucose monitoring. If the patient's glucose is not controlled after these initial interventions, she may be prescribed medication (either insulin or oral hypoglycemic agents) or have increased surveillance in prenatal care or changes in delivery management.

Suggestions for Practice Regarding the I Statement

In deciding whether to screen for GDM before 24 weeks of gestation, primary care providers should consider the following.

Potential Preventable Burden

Gestational diabetes affects about 240,000 (7%) of the 4 million annual births in the United States. Pregnant women who are diagnosed with GDM before 24 weeks may be at even greater risk for maternal and fetal complications and type 2 diabetes and may benefit from early identification and treatment. Women with GDM are at increased risk for type 2 diabetes mellitus.

Potential Harms

Potential harms of screening for gestational diabetes include psychological harms and intensive medical interventions (induction of labor, cesarean delivery, or admission to the neonatal intensive care unit). Possible adverse effects of treatment include neonatal or maternal hypoglycemia and maternal stress.

Current Practice

A cross-sectional study reported that universal screening is the most common practice in the United States, with 96% of obstetricians routinely screening for GDM. Some women are screened earlier than 24 weeks of gestation because they have risk factors for type 2 diabetes, such as obesity, family history of type 2 diabetes, or previous fetal macrosomia.

If a pregnant woman presents in the first trimester or in early pregnancy with risk factors for type 2 diabetes, clinicians should use their clinical judgment to determine appropriate screening for that individual patient given her health needs and the insufficient evidence.

Other Approaches to Prevention

Most pregnant women should be encouraged to attain moderate gestational weight gain, based on their prepregnancy BMI, and to participate in physical activity based on their clinician's recommendations. The Institute of Medicine has made recommendations for weight gain during pregnancy based on prepregnancy BMI.

Definitions:

What the U.S. Preventive Services Task Force (USPSTF) Grades Mean and Suggestions for Practice

Grade	Grade Definitions	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer/provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer/provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer/provide this service only if other considerations support offering or providing the service in an individual patient.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be measured.	Read "Clinical Considerations" section of USPSTF Recommendation Statement (see the "Major Recommendations" field). If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

USPSTF Levels of Certainty Regarding Net Benefit

Definition: The USPSTF defines *certainty* as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	<p>The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by factors such as:</p> <ul style="list-style-type: none"> • The number, size, or quality of individual studies • Inconsistency of findings across individual studies • Limited generalizability of findings to routine primary care practice; and • Lack of coherence in the chain of evidence <p>As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.</p>
Low	<p>The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of:</p> <ul style="list-style-type: none"> • The limited number or size of studies • Important flaws in study design or methods • Inconsistency of findings across individual studies • Gaps in the chain of evidence • Findings not generalizable to routine primary care practice; and • A lack of information on important health outcomes

Level of Description	More information may allow an estimation of effects on health outcomes.
Certainty	

Clinical Algorithm(s)

None available

Scope

Disease/Condition(s)

Gestational diabetes mellitus (GDM)

Guideline Category

Prevention

Screening

Clinical Specialty

Endocrinology

Family Practice

Internal Medicine

Obstetrics and Gynecology

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Health Care Providers

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

- To summarize the current U.S. Preventive Services Task Force (USPSTF) recommendations and supporting scientific evidence on screening for gestational diabetes
- To update the 2008 USPSTF recommendations on screening for gestational diabetes

Target Population

Pregnant women who have not been previously diagnosed with type 1 or 2 diabetes mellitus

Interventions and Practices Considered

Screening for gestational diabetes mellitus (GDM) in asymptomatic pregnant women before and after 24 weeks of gestation, including:

- Oral glucose challenge test (OGCT)
- Oral glucose tolerance test (OGTT)

Major Outcomes Considered

- Key Question 1: What are the sensitivities, specificities, reliabilities, and yields of current screening tests for gestational diabetes mellitus (GDM)? (a) After 24 weeks' gestation? (b) During the first trimester and up to 24 weeks' gestation?
- Key Question 2: What is the direct evidence on the benefits and harms of screening women (before and after 24 weeks' gestation) for GDM to reduce maternal, fetal, and infant morbidity and mortality?
- Key Question 3: In the absence of treatment, how do health outcomes of mothers who meet various criteria for GDM and their offspring compare to those who do not meet the various criteria?
- Key Question 4: Does treatment modify the health outcomes of mothers who meet various criteria for GDM and their offspring?
- Key Question 5: What are the harms of treating GDM and do they vary by diagnostic approach?

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the University of Alberta Evidence-based Practice Center (EPC), Edmonton, Alberta, Canada for the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Data Sources and Searches

Screening

A research librarian conducted comprehensive searches from 1995 to May 2012. Databases included Ovid MEDLINE (Appendix Table 1, available at www.annals.org) , Ovid MEDLINE In-Process & Other Non-Indexed Citations, the Cochrane Central Register of Controlled Trials, the Cochrane Database of Systematic Reviews, the Database of Abstracts of Reviews of Effects, Global Health, EMBASE, Pascal CINAHL Plus with Full Text (EBSCO host), BIOSIS Previews (Web of Knowledge), Science Citation Index Expanded and Conference Proceedings Citation Index - Science (both via Web of Science), PubMed, Latin American and Caribbean Health Science Literature, the National Library of Medicine Gateway, and OCLC ProceedingsFirst and PapersFirst. The EPC staff searched trial registries, including the World Health Organization (WHO) International Clinical Trials Registry Platform, ClinicalTrials.gov, and Current Controlled Trials. The EPC staff also hand-searched proceedings from the scientific meetings (2009–2011) of the American Diabetes Association (ADA), International Association of the Diabetes and Pregnancy Study Groups (IADPSG), International Symposium on Diabetes and Pregnancy, and Australasian Diabetes in Pregnancy Society; searched Web sites of relevant professional associations; and reviewed reference lists of relevant reviews and included studies.

Treatment

The EPC staff searched for trials and cohort studies published in English from 1995 to May 2012 in MEDLINE (Ovid interface) (Appendix Table 1, available at www.annals.org) , Ovid MEDLINE In-Process & Other Non-Indexed Citations, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Global Health, EMBASE,

Pascal CINAHL Plus with Full Text (EBSCOhost), BIOSIS Previews (Web of Knowledge), Science Citation Index Expanded and Conference Proceedings Citation Index (both via Web of Science), PubMed, Latin American and Caribbean Health Science Literature, National Library of Medicine Gateway, and OCLC ProceedingsFirst and PapersFirst. The EPC staff also searched trial registries and the Web sites of relevant professional associations and research groups for conference abstracts and proceedings between 2010 and 2012. They evaluated the reference lists of relevant reviews and included studies.

Study Selection

Screening

Two reviewers independently screened titles and abstracts. Full publications of potentially relevant studies were independently assessed by 2 reviewers using a standardized form. The EPC staff resolved disagreements by consensus or third-party adjudication. The EPC staff included studies if they were English-language prospective studies (that is, trials or cohort studies) that included pregnant women (≥ 24 or < 24 weeks' gestation) with no known history of preexisting diabetes; reported sufficient data to populate a 2 X 2 table in order to calculate sensitivity and specificity; and compared any GDM screening test (such as blood or urine measurements or a questionnaire) with any reference standard (another screening or diagnostic test). Studies were included regardless of setting and duration of follow-up. The decision to restrict studies to those published in English was made in consultation with the panel of technical experts, who believed that most relevant research would be published in English language reports.

Treatment

Two reviewers independently screened titles, keywords, and abstracts. The EPC staff retrieved the full text for any study that was considered potentially relevant by at least one reviewer. Two reviewers independently assessed each full-text article by using a detailed form. The EPC staff resolved disagreements through discussion. The researchers included studies if they were randomized, controlled trials (RCTs) or non-RCTs or cohort studies; involved pregnant women with no known preexisting diabetes; compared any treatment of GDM with no treatment; and reported short- and long-term maternal, fetal, neonatal, and child outcomes that the technical panel deemed important.

Number of Source Documents

Data from 97 studies were included.

- Key Question 1: 51
- Key Question 2:
- Key Question 3: 38
- Key Question 4 and 5: 11

Note: Five studies addressed more than one Key Question, therefore the sum of studies addressing the Key Questions exceeds the total number of studies.

Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus

Weighting According to a Rating Scheme (Scheme Not Given)

Rating Scheme for the Strength of the Evidence

Not stated

Methods Used to Analyze the Evidence

Meta-Analysis of Randomized Controlled Trials

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the University of Alberta Evidence-based Practice Center (EPC), Edmonton, Alberta, Canada for the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Data Extraction and Quality Assessment

Screening

Two reviewers independently assessed the methodological quality of studies and resolved discrepancies by consensus. The reviewers assessed studies by using the QUADAS-2 (Quality Assessment of Diagnostic Accuracy Studies 2) checklist. One reviewer used a standardized form to extract data; a second reviewer checked the data for accuracy. Reviewers resolved discrepancies by consensus or third-party adjudication. The reviewers extracted study and patient characteristics, inclusion and exclusion criteria, and index test and reference standard characteristics.

Treatment

One reviewer extracted data by using a structured, electronic form, and a second reviewer checked the data for accuracy and completeness. Discrepancies were resolved through consensus. The EPC staff extracted information on study characteristics, populations, interventions, outcomes, and results.

Two reviewers independently assessed the methodological quality of included studies and resolved disagreements through discussion. The EPC staff used the Cochrane risk of bias tool to assess randomized, controlled trials (RCTs) and the Newcastle-Ottawa Scale to assess cohort studies.

Data Synthesis and Analysis

Screening

The EPC staff constructed 2 X 2 tables and calculated sensitivity, specificity, and positive and negative likelihood ratios (LRs). Sensitivity and specificity are measures of test accuracy. Likelihood ratios are used to estimate the increased or decreased probability of disease (such as gestational diabetes mellitus [GDM]) for a patient and can be used to refine clinical judgment. The larger the positive LR, the greater the accuracy of the test and the greater the likelihood of disease after a positive test result; the smaller the negative LR, the smaller the likelihood of disease after a negative test result. A positive LR greater than 10 indicates a large and often conclusive probability that the condition is present, whereas a negative LR less than 0.10 suggests a large and often conclusive probability that the condition is not present. An LR of 1 means that a positive or negative result is equally probable in a patient with or without the disease.

If there were more than 3 studies and they were clinically homogeneous (that is, they included women at <24 or ≥24 weeks' gestation and used similar thresholds and diagnostic criteria), the EPC staff pooled the data by using a hierarchical summary receiver-operating characteristic curve (HSROC) and bivariate analysis of sensitivity and specificity. The HSROC simultaneously compares the sensitivity and specificity (accounting for their correlation) for all studies comparing a particular screening test with GDM diagnostic criteria. The EPC staff used Review Manager, version 5.0 (The Cochrane Collaboration, Copenhagen, Denmark) to perform meta-analyses and the metandi program in Stata, version 11.0 (StataCorp, College Station, Texas) to fit the bivariate and HSROC models and produce the pooled estimates of sensitivity, specificity, and LRs.

The Results section of the systematic review is organized by type of screening test (for example, oral glucose challenge test [OGCT]) and is further grouped by the diagnostic criteria used to confirm GDM. The EPC staff examined the effect of screening before and after 24 weeks' gestation. Sensitivities, specificities, and LRs and their 95% CIs are presented in summary tables that include all screening tests and diagnostic criteria.

Treatment

Two independent reviewers graded the strength of evidence by using the EPC Grading of Recommendations Assessment, Development and Evaluation approach. Discrepancies were resolved by discussion. The EPC staff assessed 4 major domains (risk of bias, consistency, directness, and precision) and summarized the overall strength of evidence for each outcome as high, moderate, or low. When no studies were available for an outcome or the evidence did not permit estimation of an effect, the reviewers rated strength of evidence as insufficient.

The EPC staff described the results of studies qualitatively and in evidence tables. They performed meta-analyses when studies were sufficiently similar in terms of statistical homogeneity (that is, I^2 75%). The EPC staff used the Mantel-Haenszel method for relative risks and the inverse variance method for pooling mean differences. They combined results by using the random-effects model. For dichotomous outcomes, the EPC staff computed relative risk to estimate between-group differences. If no event was reported in 1 treatment group, a correction factor of 0.5 was

added to each cell of the 2 X 2 table to obtain estimates of the relative risk.

For continuous variables, the EPC staff calculated mean differences for individual studies. The EPC staff reported all results with 95% CIs and used Review Manager Version 5.0 (The Cochrane Collaboration, Copenhagen, Denmark) to perform meta-analyses.

Methods Used to Formulate the Recommendations

- Balance Sheets
- Expert Consensus

Description of Methods Used to Formulate the Recommendations

The U.S. Preventive Services Task Force (USPSTF) systematically reviews the evidence concerning both the benefits and harms of widespread implementation of a preventive service. It then assesses the certainty of the evidence and the magnitude of the benefits and harms. On the basis of this assessment, the USPSTF assigns a letter grade to each preventive service signifying its recommendation about provision of the service (see Table below). An important, but often challenging, step is determining the balance between benefits and harms to estimate "net benefit" (that is, benefits minus harms).

Table 1. U.S. Preventive Services Task Force Recommendation Grid*

Certainty of Net Benefit	Magnitude of Net Benefit			
	Substantial	Moderate	Small	Zero/Negative
High	A	B	C	D
Moderate	B	B	C	D
Low	Insufficient			

*A, B, C, D, and I (*Insufficient*) represent the letter grades of recommendation or statement of insufficient evidence assigned by the U.S. Preventive Services Task Force after assessing certainty and magnitude of net benefit of the service (see the "Rating Scheme for the Strength of the Recommendations" field).

The overarching question that the USPSTF seeks to answer for every preventive service is whether evidence suggests that provision of the service would improve health outcomes if implemented in a general primary care population. For screening topics, this standard could be met by a large randomized, controlled trial (RCT) in a representative asymptomatic population with follow-up of all members of both the group "invited for screening" and the group "not invited for screening."

Direct RCT evidence about screening is often unavailable, so the USPSTF considers indirect evidence. To guide its selection of indirect evidence, the USPSTF constructs a "chain of evidence" within an analytic framework. For each key question, the body of pertinent literature is critically appraised, focusing on the following 6 questions:

1. Do the studies have the appropriate research design to answer the key question(s)?
2. To what extent are the existing studies of high quality? (i.e., what is the internal validity?)
3. To what extent are the results of the studies generalizable to the general U.S. primary care population and situation? (i.e., what is the external validity?)
4. How many studies have been conducted that address the key question(s)? How large are the studies? (i.e., what is the precision of the evidence?)
5. How consistent are the results of the studies?
6. Are there additional factors that assist the USPSTF in drawing conclusions (e.g., presence or absence of dose–response effects, fit within a biologic model)?

The next step in the USPSTF process is to use the evidence from the key questions to assess whether there would be net benefit if the service were implemented. In 2001, the USPSTF published an article that documented its systematic processes of evidence evaluation and recommendation development. At that time, the USPSTF's overall assessment of evidence was described as good, fair, or poor. The USPSTF

realized that this rating seemed to apply only to how well studies were conducted and did not fully capture all of the issues that go into an overall assessment of the evidence about net benefit. To avoid confusion, the USPSTF has changed its terminology. Whereas individual study quality will continue to be characterized as good, fair, or poor, the term certainty will now be used to describe the USPSTF's assessment of the overall body of evidence about net benefit of a preventive service and the likelihood that the assessment is correct. Certainty will be determined by considering all 6 questions listed above; the judgment about certainty will be described as high, moderate, or low.

In making its assessment of certainty about net benefit, the evaluation of the evidence from each key question plays a primary role. It is important to note that the USPSTF makes recommendations for real-world medical practice in the United States and must determine to what extent the evidence for each key question—even evidence from screening RCTs or treatment RCTs—can be applied to the general primary care population. Frequently, studies are conducted in highly selected populations under special conditions. The USPSTF must consider differences between the general primary care population and the populations studied in RCTs and make judgments about the likelihood of observing the same effect in actual practice.

It is also important to note that one of the key questions in the analytic framework refers to the potential harms of the preventive service. The USPSTF considers the evidence about the benefits and harms of preventive services separately and equally. Data about harms are often obtained from observational studies because harms observed in RCTs may not be representative of those found in usual practice and because some harms are not completely measured and reported in RCTs.

Putting the body of evidence for all key questions together as a chain, the USPSTF assesses the certainty of net benefit of a preventive service by asking the 6 major questions listed above. The USPSTF would rate a body of convincing evidence about the benefits of a service that, for example, derives from several RCTs of screening in which the estimate of benefits can be generalized to the general primary care population as "high" certainty (see the "Rating Scheme for the Strength of the Recommendations" field). The USPSTF would rate a body of evidence that was not clearly applicable to general practice or has other defects in quality, research design, or consistency of studies as "moderate" certainty. Certainty is "low" when, for example, there are gaps in the evidence linking parts of the analytic framework, when evidence to determine the harms of treatment is unavailable, or when evidence about the benefits of treatment is insufficient. Table 4 in the methodology document listed below (see "Availability of Companion Documents" field) summarizes the current terminology used by the USPSTF to describe the critical assessment of evidence at all 3 levels: individual studies, key questions, and overall certainty of net benefit of the preventive service.

Sawaya GF et al. Update on the methods of the U.S. Preventive Services Task Force: estimating certainty and magnitude of net benefit. *Ann Intern Med.* 2007;147:871-875. [5 references].

I Statements

For I statements, the USPSTF has a new plan to commission its Evidence-based Practice Centers to collect information in 4 domains pertinent to clinical decisions about prevention and to report this information routinely. This plan is described in the paper: Petitti DB et al. Update on the methods of the U.S. Preventive Services Task Force: insufficient evidence. *Ann Intern Med.* 2009;150:199-205. www.annals.org

The first domain is potential preventable burden of suffering from the condition. When evidence is insufficient, provision of an intervention designed to prevent a serious condition (such as dementia) might be viewed more favorably than provision of a service designed to prevent a condition that does not cause as much suffering (such as rash). The USPSTF recognized that "burden of suffering" is subjective and involves judgment. In clinical settings, it should be informed by patient values and concerns.

The second domain is potential harm of the intervention. When evidence is insufficient, an intervention with a large potential for harm (such as major surgery) might be viewed less favorably than an intervention with a small potential for harm (such as advice to watch less television). The USPSTF again acknowledges the subjective nature and the difficulty of assessing potential harms: for example, how bad is a "mild" stroke?

The third domain is cost—not just monetary cost, but opportunity cost, in particular the amount of time a provider spends to provide the service, the amount of time the patient spends to partake of it, and the benefits that might derive from alternative uses of the time or money for patients, clinicians, or systems. Consideration of clinician time is especially important for preventive services with only insufficient evidence because providing them could "crowd out" provision of preventive services with proven value, services for conditions that require immediate action, or services more desired by the patient. For example, a decision to routinely inspect the skin could take up the time available to discuss smoking cessation, or to address an acute problem or a minor injury that the patient considers important.

The fourth domain is current practice. This domain was chosen because it is important to clinicians for at least 2 reasons. Clinicians justifiably fear that not doing something that is done on a widespread basis in the community may lead to litigation. More important, addressing patient expectations is a crucial part of the clinician–patient relationship in terms of building trust and developing a collaborative therapeutic relationship. The consequences of not providing a service that is neither widely available nor widely used are less serious than not providing a service accepted

by the medical profession and thus expected by patients. Furthermore, ingrained care practices are difficult to change, and efforts should preferentially be directed to changing those practices for which the evidence to support change is compelling.

Although the reviewers did not explicitly recognize it when these domains were chosen, the domains all involve consideration of the potential consequences—for patients, clinicians, and systems—of providing or not providing a service. Others writing about medical decision making in the face of uncertainty have suggested that the consequences of action or inaction should play a prominent role in decisions.

Rating Scheme for the Strength of the Recommendations

What the U.S. Preventive Services Task Force (USPSTF) Grades Mean and Suggestions for Practice

Grade	Grade Definitions	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer/provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer/provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer/provide this service only if other considerations support offering or providing the service in an individual patient.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be measured.	Read "Clinical Considerations" section of USPSTF Recommendation Statement (see the "Major Recommendations" field). If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

USPSTF Levels of Certainty Regarding Net Benefit

Definition: The USPSTF defines *certainty* as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	<p>The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by factors such as:</p> <ul style="list-style-type: none"> • The number, size, or quality of individual studies • Inconsistency of findings across individual studies • Limited generalizability of findings to routine primary care practice; and • Lack of coherence in the chain of evidence <p>As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be</p>

Level of Low Certainty	Description
	<p>large enough to alter the conclusion.</p> <p>The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of:</p> <ul style="list-style-type: none"> • The limited number or size of studies • Important flaws in study design or methods • Inconsistency of findings across individual studies • Gaps in the chain of evidence • Findings not generalizable to routine primary care practice; and • A lack of information on important health outcomes <p>More information may allow an estimation of effects on health outcomes.</p>

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Comparison with Guidelines from Other Groups

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Peer Review. Before the U.S. Preventive Services Task Force (USPSTF) makes its final determinations about recommendations on a given preventive service, the Evidence-based Practice Center and the Agency for Healthcare Research and Quality send a draft evidence review to 4 to 6 external experts and to Federal agencies and professional and disease-based health organizations with interests in the topic. The experts are asked to examine the review critically for accuracy and completeness and to respond to a series of specific questions about the document. After assembling these external review comments and documenting the proposed response to key comments, the topic team presents this information to the USPSTF in memo form. In this way, the USPSTF can consider these external comments before it votes on its recommendations about the service. Draft recommendation statements are then circulated for comment among reviewers representing professional societies, voluntary organizations, and Federal agencies, as well as posted on the Task Force Web site for public comment. These comments are discussed before the final recommendations are confirmed.

Response to Public Comment. A draft version of this recommendation statement was posted for public comment on the USPSTF Web site from 28 May to 24 June 2013. In response to these comments, the USPSTF added language to the Rationale section about the link between gestational diabetes mellitus (GDM) and type 2 diabetes mellitus. The USPSTF also added language to emphasize the scope of the recommendation statement, and additional language describing gaps in the evidence was added to the Research Needs and Gaps section.

Comparison with Guidelines from Other Groups. Recommendations for screening from the following groups were discussed: American Congress of Obstetricians and Gynecologists (ACOG), American Diabetes Association (ADA), International Association of Diabetes and Pregnancy Study Groups (IADPSG), the National Institutes of Health Consensus Development Program, the American Academy of Family Physicians (AAFP), and The Endocrine Society.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Benefits of Detection and Early Treatment

The U.S. Preventive Services Task Force (USPSTF) found adequate evidence that treatment of screen-detected gestational diabetes mellitus (GDM) with dietary modifications, glucose monitoring, and insulin (if needed) can significantly reduce the risk for preeclampsia, fetal macrosomia, and shoulder dystocia. When these outcomes are considered collectively, there is a moderate net benefit for the mother and infant. The benefit of treatment on long-term metabolic outcomes in women who are treated for GDM compared with those who are not treated is uncertain.

The USPSTF found inadequate evidence to determine whether there are benefits to screening for GDM in women before 24 weeks of gestation.

Potential Harms

Potential harms of screening for gestational diabetes include psychological harms and intensive medical interventions (induction of labor, cesarean delivery, or admission to the neonatal intensive care unit). Possible adverse effects of treatment include neonatal or maternal hypoglycemia and maternal stress.

Harms of Detection and Early Treatment

Overall, the U.S. Preventive Services Task Force (USPSTF) found adequate evidence that the magnitude of the harms of screening and treatment is small to none. Randomized, controlled trials (RCTs) demonstrated an increase in the number of prenatal visits in screen-detected women who were treated for gestational diabetes mellitus (GDM) compared with screen-detected women who were not treated. There was conflicting evidence on the risk for an increase in the induction of labor associated with treatment. No significant differences were reported for cesarean delivery or neonatal intensive care unit admissions between women who were treated and women who were not treated for GDM in the overall pooled meta-analysis. Trials also demonstrated no significant differences in the incidence of small-for-gestational-age infants or episodes of neonatal hypoglycemia, but the trials were not adequately powered to detect meaningful differences in these outcomes.

Qualifying Statements

Qualifying Statements

- The U.S. Preventive Services Task Force (USPSTF) makes recommendations about the effectiveness of specific clinical preventive services for patients without related signs or symptoms.
- It bases its recommendations on the evidence of both the benefits and harms of the service and an assessment of the balance. The USPSTF does not consider the costs of providing a service in this assessment.
- The USPSTF recognizes that clinical decisions involve more considerations than evidence alone. Clinicians should understand the evidence but individualize decision making to the specific patient or situation. Similarly, the USPSTF notes that policy and coverage decisions involve considerations in addition to the evidence of clinical benefits and harms.
- Recommendations made by the USPSTF are independent of the U.S. government. They should not be construed as an official position of the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services.

Implementation of the Guideline

Description of Implementation Strategy

The experiences of the first and second U.S. Preventive Services Task Force (USPSTF), as well as that of other evidence-based guideline efforts, have highlighted the importance of identifying effective ways to implement clinical recommendations. Practice guidelines are relatively weak tools for changing clinical practice when used in isolation. To effect change, guidelines must be coupled with strategies to improve their acceptance and

feasibility. Such strategies include enlisting the support of local opinion leaders, using reminder systems for clinicians and patients, adopting standing orders, and audit and feedback of information to clinicians about their compliance with recommended practice.

In the case of preventive services guidelines, implementation needs to go beyond traditional dissemination and promotion efforts to recognize the added patient and clinician barriers that affect preventive care. These include clinicians' ambivalence about whether preventive medicine is part of their job, the psychological and practical challenges that patients face in changing behaviors, lack of access to health care or of insurance coverage for preventive services for some patients, competing pressures within the context of shorter office visits, and the lack of organized systems in most practices to ensure the delivery of recommended preventive care.

Dissemination strategies have changed dramatically in this age of electronic information. While recognizing the continuing value of journals and other print formats for dissemination, the Agency for Healthcare Research and Quality will make all USPSTF products available through its [Web site](#) . The combination of electronic access and extensive material in the public domain should make it easier for a broad audience of users to access USPSTF materials and adapt them for their local needs. Online access to USPSTF products also opens up new possibilities for the appearance of the annual, pocket-size *Guide to Clinical Preventive Services*.

To be successful, approaches for implementing prevention have to be tailored to the local level and deal with the specific barriers at a given site, typically requiring the redesign of systems of care. Such a systems approach to prevention has had notable success in established staff-model health maintenance organizations, by addressing organization of care, emphasizing a philosophy of prevention, and altering the training and incentives for clinicians. Staff-model plans also benefit from integrated information systems that can track the use of needed services and generate automatic reminders aimed at patients and clinicians, some of the most consistently successful interventions. Information systems remain a major challenge for individual clinicians' offices, however, as well as for looser affiliations of practices in network-model managed care and independent practice associations, where data on patient visits, referrals, and test results are not always centralized.

Implementation Tools

Foreign Language Translations

Mobile Device Resources

Patient Resources

Pocket Guide/Reference Cards

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

U.S. Preventive Services Task Force (USPSTF). Screening for gestational diabetes mellitus: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2014 Mar 18;160(6):414-20. [20 references] [PubMed](#)

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

1996 (revised 2014 Mar 18)

Guideline Developer(s)

U.S. Preventive Services Task Force - Independent Expert Panel

Guideline Developer Comment

The U.S. Preventive Services Task Force (USPSTF) is a federally-appointed panel of independent experts. Conclusions of the USPSTF do not necessarily reflect policy of the U.S. Department of Health and Human Services (DHHS) or its agencies.

Source(s) of Funding

The U.S. Preventive Services Task Force (USPSTF) is an independent, voluntary body. The U.S. Congress mandates that the Agency for Healthcare Research and Quality support the operations of the USPSTF.

Guideline Committee

U.S. Preventive Services Task Force (USPSTF)

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Joy Melnikow, MD, MPH, a former USPSTF member, also contributed to the development of the recommendation.

**Members of the Task Force at the time this recommendation was finalized. For a list of current Task Force members, go to <http://www.uspreventiveservicestaskforce.org/Page/Name/our-members> .*

Financial Disclosures/Conflicts of Interest

The U.S. Preventive Services Task Force (USPSTF) has an explicit policy concerning conflict of interest. All members disclose at each meeting if they have a significant financial, professional/business, or intellectual conflict for each topic being discussed. Task Force members with conflicts may be recused from discussing or voting on recommendations about the topic in question.

Potential Conflicts of Interest: The authors declared that their organization's policy regarding management of conflicts of interest was followed in the development of this clinical guideline. Disclosure forms from USPSTF members can be viewed at www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M13-2905 .

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: U.S. Preventive Services Task Force. Screening for gestational diabetes mellitus: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2008 May 20;148(10):759-65.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Electronic copies: Available from the [Annals of Internal Medicine Web site](#) .

Availability of Companion Documents

The following are available:

Evidence Reviews:

- Donovan L, Hartling L, Muise M, Guthrie A, Vandermeer B, Dryden DM. Screening tests for gestational diabetes: a systematic review for the U.S. Preventive Services Task Force. *Ann Intern Med.* 2013;159:115-22.
- Hartling L, Dryden DM, Guthrie A, Muise M, Vandermeer B, Donovan L. Benefits and harms of treating gestational diabetes mellitus: a systematic review and meta-analysis for the U.S. Preventive Services Task Force and the National Institutes of Health Office of Medical Applications of Research. *Ann Intern Med.* 2013;159:123-9.
- Hartling L, Dryden DM, Guthrie A, Muise M, Vandermeer B, Aktary WM, Pasichnyk B, Seida JC. Screening and diagnosing gestational diabetes mellitus. Evidence Report/Technology Assessment no. 210. AHRQ Publication no. 12(13)-E021-EF. Rockville (MD): Agency for Healthcare Research and Quality; 2012 Oct. 327 p.

Electronic copies: Available from the [U.S. Preventive Services Task Force \(USPSTF\) Web site](#) .

Background Articles:

- Barton MB et al. How to read the new recommendation statement: methods update from the U.S. Preventive Services Task Force. *Ann Intern Med* 2007;147:123-127.
- Guirgis-Blake J et al. Current processes of the U.S. Preventive Services Task Force: refining evidence-based recommendation development. *Ann Intern Med* 2007;147:117-122.
- Sawaya GF et al. Update on the methods of the U.S. Preventive Services Task Force: estimating certainty and magnitude of net benefit. *Ann Intern Med* 2007;147:871-875.
- Petitti DB et al. Update on the methods of the U.S. Preventive Services Task Force: insufficient evidence. *Ann Intern Med.* 2009;150:199-205.

Electronic copies: Available from the [USPSTF Web site](#) .

The following are also available:

- Screening for gestational diabetes mellitus. Clinical summary of U.S. Preventive Services Task Force recommendations. 2013. 1 p.

Electronic copies: Available from the [USPSTF Web site](#) .

- The guide to clinical preventive services, 2012. Recommendations of the U.S. Preventive Services Task Force. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2012. 128 p. Electronic copies available from the [AHRQ Web site](#) .
- See the related QualityTool summary on the [Health Care Innovations Exchange Web site](#) .
- A continuing medical education (CME) activity is available from the [Annals of Internal Medicine Web site](#) .

The [Electronic Preventive Services Selector \(ePSS\)](#) is an application designed to provide primary care clinicians and health care teams timely decision support regarding appropriate screening, counseling, and preventive services for their patients. It is based on the current, evidence-based recommendations of the USPSTF and can be searched by specific patient characteristics, such as age, sex, and selected behavioral risk factors.

Patient Resources

The following are available:

- Screening for gestational diabetes. Understanding task force recommendations. Consumer fact sheet. Rockville (MD): U.S. Preventive Services Task Force. 2014 Jan. 4 p. Electronic copies: Available in Portable Document Format (PDF) from the [U.S. Preventive Services Task Force \(USPSTF\) Web site](#) .
- Screening for gestational diabetes mellitus: U.S. Preventive Services Task Force Recommendation statement. Summaries for patients. Ann Intern Med 2014;160(6):I-30-30. Electronic copies: Available from the [Annals of Internal Medicine Web site](#) .
- Women: stay healthy at any age. Rockville (MD): Agency for Healthcare Research and Quality. AHRQ Pub. No. 14-IP007-A. 2014 May. 5 p. Electronic copies: Available in Portable Document Format (PDF) in [English](#) and [Spanish](#) from the AHRQ Web site. See the related QualityTool summary on the [Health Care Innovations Exchange Web site](#) .

Print copies: Available in English and Spanish from the Agency for Healthcare Research and Quality (AHRQ) Publications Clearinghouse. For more information, go to <http://www.ahrq.gov/research/publications/index.html> or call 1-800-358-9295 (U.S. only).

Myhealthfinder is a tool that provides personalized recommendations for clinical preventive services specific to the user's age, gender, and pregnancy status. It features evidence-based recommendations from the USPSTF and is available at www.healthfinder.gov .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

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